RCA

5693

SPECIAL RED TUBE 5693

SHARP-CUTOFF PENTODE

Intended for critical industrial applications where 10,000-hour life, extreme uniformity, rigid construction, and exceptional stability are paramount. Within its ratings, the 5693 may be used to replace its receiving-tube counterpart, type 6SJ7.

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:
Voltage . . . . 6.3 ± 5%* . . . ac or dc volts
Current . . . . 0.3 . . . . amp

Direct Interelectrode Capacitances:°

	Min.	*Av.*	*Max.*	
Grid to Plate	–	–	0.005	μμf
Input	4.8	5.3	5.8	μμf
Output	5.6	6.2	6.8	μμf

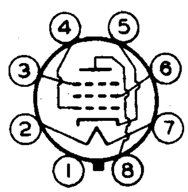
* May deviate ± 10% from rated value provided such deviation occurs for less than 2% of the operating time.

° With shell connected to cathode.

Mechanical:

Mounting Position . . . . Any
Maximum Overall Length . . . . 2-5/8"
Seated Length . . . . 1-31/32" ± 3/32"
Maximum Diameter . . . . 1-5/16"
Bulb . . . . Metal Shell MT-8
Base . . . . Small-Wafer Octal 8-Pin, Non-Hygroscopic
Basing Designation for BOTTOM VIEW 8N

Pin 1 - Shell
Pin 2 - Heater
Pin 3 - Grid No.3
Pin 4 - Grid No.1



Pin 5 - Cathode
Pin 6 - Grid No.2
Pin 7 - Heater
Pin 8 - Plate

INDUSTRIAL SERVICE

Includes applications such as dc and resistance-coupled amplifiers

Maximum Ratings, *Absolute Values*:

DC PLATE VOLTAGE	300 max.	volts
DC PLATE-SUPPLY VOLTAGE	330 max.	volts
DC GRID-No.3 (SUPPRESSOR) VOLTAGE:		
Negative bias value	0 min.	volts
	-100 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE▲	125 max.	volts
DC GRID-No.2-SUPPLY VOLTAGE	330 max.	volts

▲: See next page.

5693

5693
SHARP-CUTOFF PENTODE

GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Negative bias range.	-1■ min. to -50 max.	volts
Negative peak value.	-50 max.	volts
DC CATHODE CURRENT	10 max.	ma
PLATE DISSIPATION.	2 max.	watts
GRID-No.2 DISSIPATION.	0.3 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	100 max.	volts
Heater positive with respect to cathode.	100 max.	volts
AMBIENT TEMPERATURE RANGE.	-55 to +90	°C

Maximum Circuit Value:

See curve on a following page giving maximum values of the grid-No.1 resistor.

Characteristics and Range Values:

Heater volts, 6.3; Plate Volts, 250; Grid-No.3 Volts, 0; Grid-No.2 Volts, 100; Grid-No.1 Volts, -3.

	Min.	*Av.*	*Max.*	
Heater Current	0.275	0.300	0.325	amp
Heater-Cathode Current with heater-cathode voltage of ± 100 volts	-	-	5	µamp
Plate Current.	2.3	3.0	3.7	ma
Plate Current for grid-No.1 voltage of -7.5 volts. . .	2	30	80	µamp
Plate Current for grid-No.3 voltage of -70 volts . . .	150	450	750	µamp
Grid-No.2 Current.	0.60	0.85	1.10	ma
Reverse Grid-No.1 Current. .	-	-	0.1	µamp
Plate Resistance	1.0	-	-	megohm
Transconductance	1400	1650	1900	µmhos

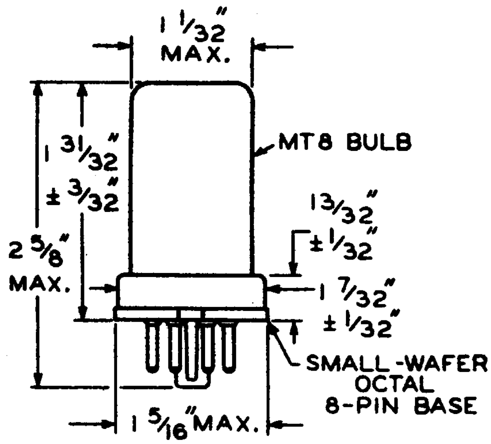
Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No. 20 at front of Receiving Tube Section.

▲ The 5693 may be operated at a grid-No.2 voltage as high as the rated grid-No.2 supply voltage when the grid-No.2 dissipation rating is not exceeded for any signal condition and when a resistor is used in series with grid-No.2 and its supply voltage.

■ For resistance-coupled amplifier applications, the grid-No.1 negative bias may be as low as -0.5 volt.

5693
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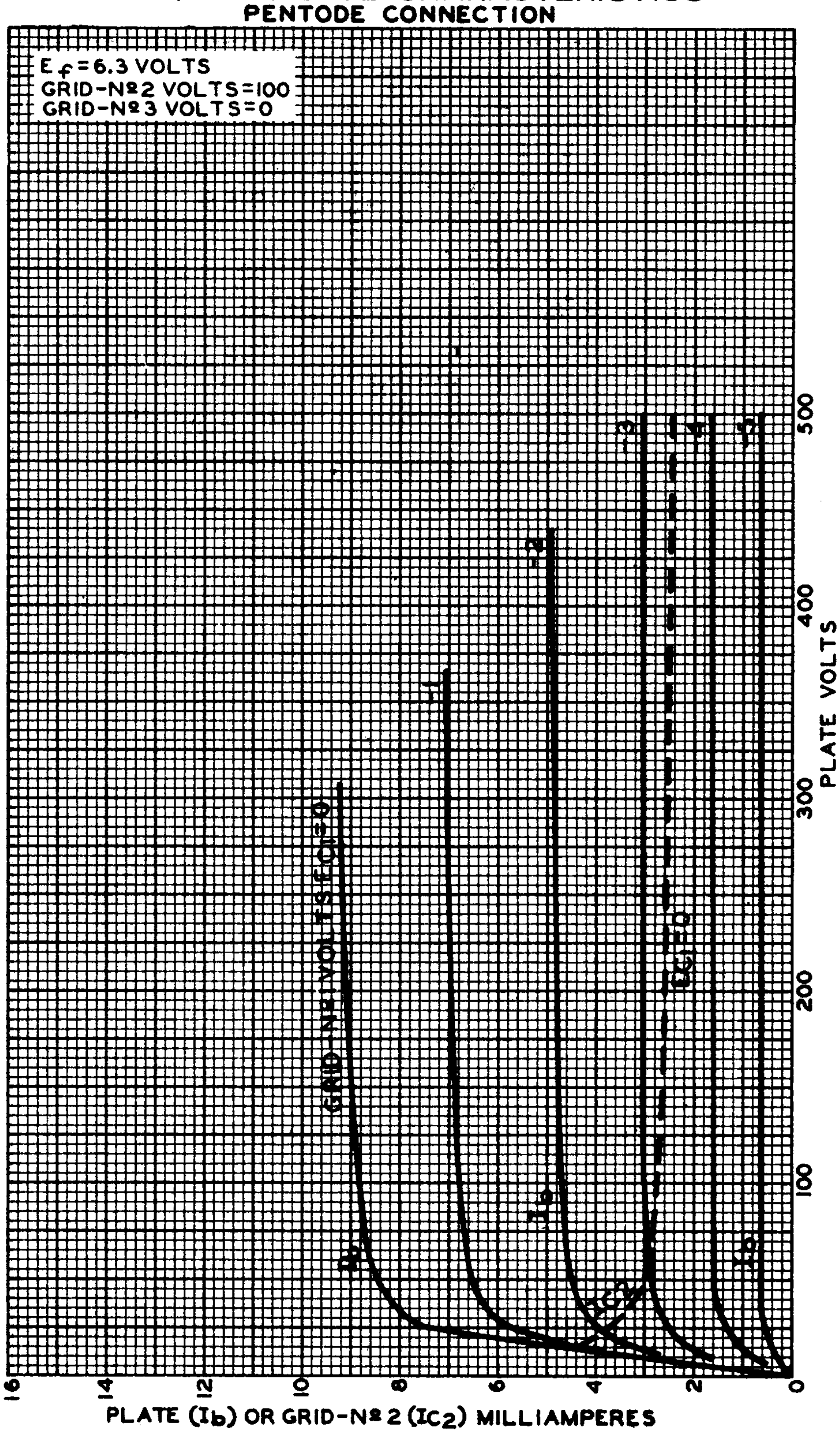
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AVERAGE PLATE CHARACTERISTICS

PENTODE CONNECTION



OCT. 16, 1947

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5693

OPERATION CHARACTERISTICS

E_f = 6.3 VOLTS PLATE VOLTS = 300 GRID-No 3 VOLTS = 0

CURVE	GRID-No 2 RESISTOR	GRID-No 2 SUPPLY VOLTS
1	0 MEG.	100
2	0.25 MEG.	300
3	0.5 MEG.	300
4	0.75 MEG.	300

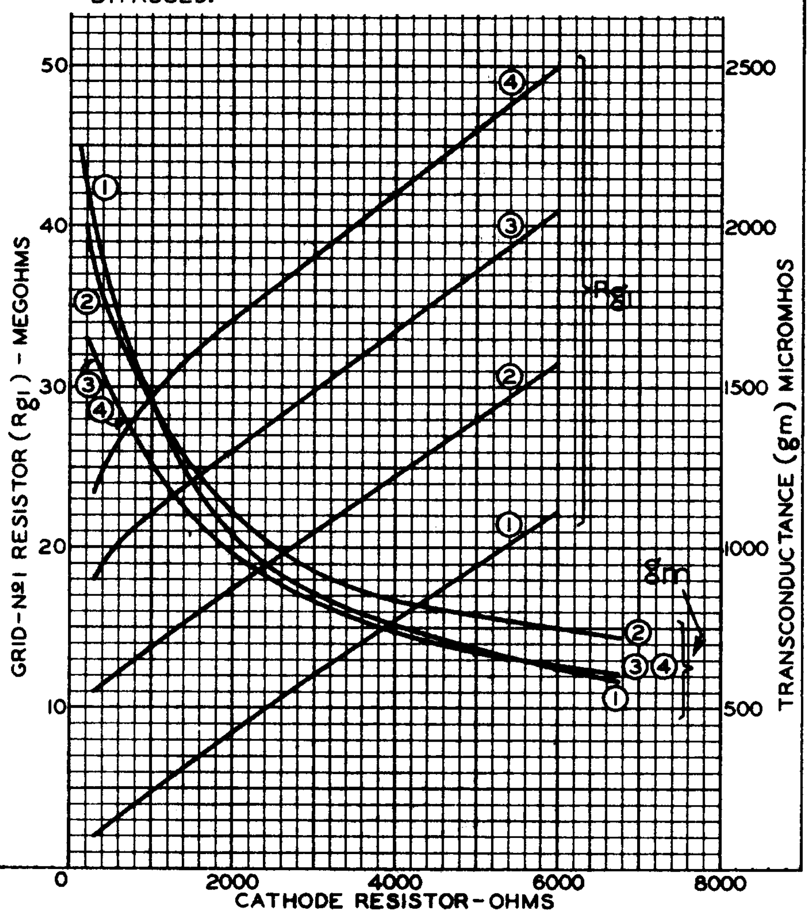
THESE CURVES ARE BASED ON THE FOLLOWING VALUES: ΔI_K=300μAMP, ΔI_{g_1}=0.1μAMP

EXPRESSING THESE VALUES AS A RATIO, WE HAVE:

$$\frac{\Delta I_K}{\Delta I_{g_1}} = \frac{300}{0.1} \text{ OR } 3000$$

FOR THOSE APPLICATIONS PERMITTING OTHER VALUES OF ΔI_K, A NEW RATIO OF $\Delta I_K/\Delta I_{g_1}$ CAN BE CALCULATED. THE VALUES OF R_{g_1} AS READ FROM THE CURVE MUST BE MULTIPLIED BY A FACTOR WHICH IS THE QUOTIENT OF THE NEW RATIO DIVIDED BY THE OLD RATIO. FOR EXAMPLE, IF THE NEW RATIO IS 6000 THE MULTIPLYING FACTOR IS 6000/3000, OR 2, AND VALUES OF R_{g_1} AS READ FROM THE CURVE ARE THEREFORE MULTIPLIED BY 2.

NOTE: TRANSCONDUCTANCE CURVES WERE OBTAINED WITH GRID-No 2 RESISTOR AND CATHODE RESISTOR SUITABLY BYPASSED.

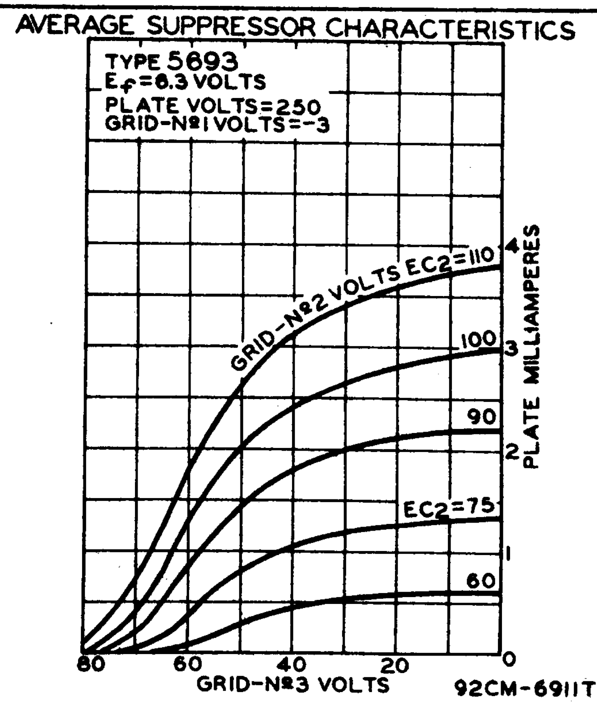


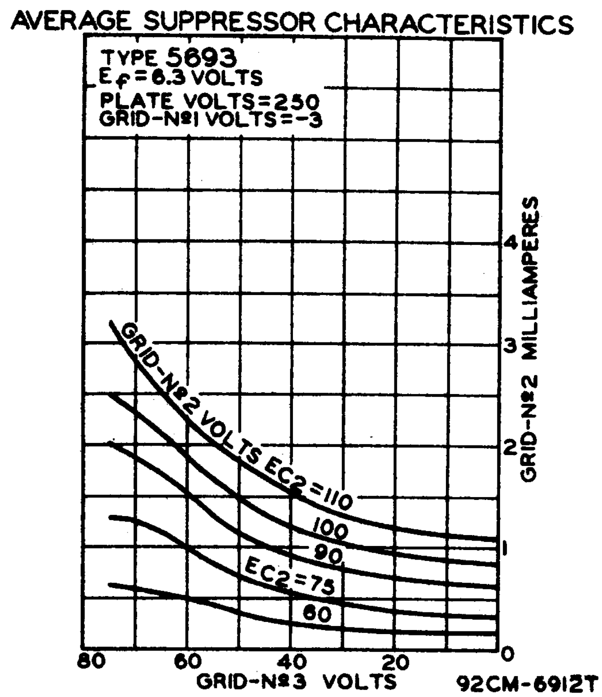
JAN.6,1948 **TUBE DEPARTMENT** 92CM-6920R1

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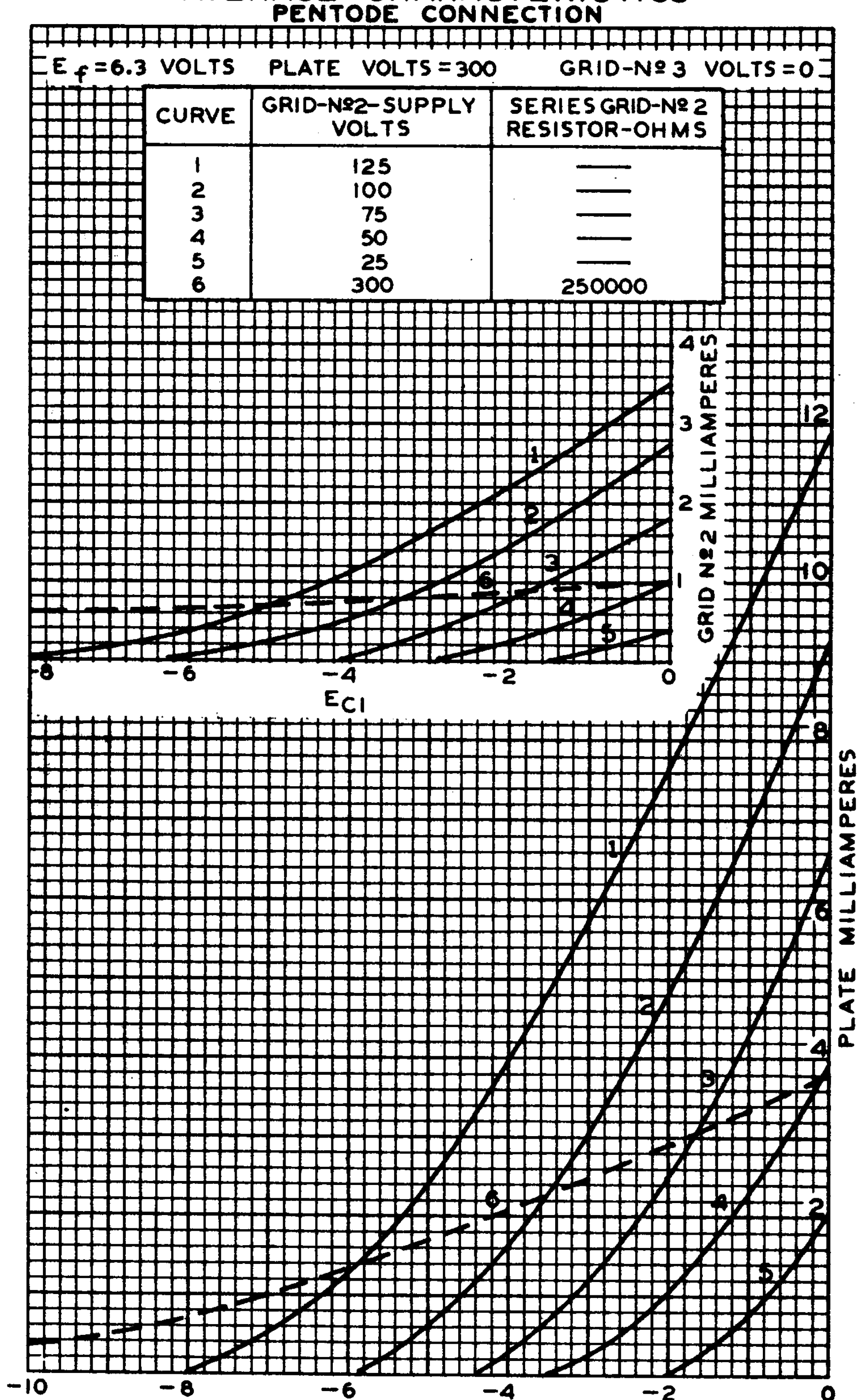
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AVERAGE CHARACTERISTICS
PENTODE CONNECTION

E_f = 6.3 VOLTS PLATE VOLTS = 300 GRID-Nº 3 VOLTS = 0

CURVE	GRID-Nº2-SUPPLY VOLTS	SERIES GRID-Nº 2 RESISTOR-OHMS
1	125	—
2	100	—
3	75	—
4	50	—
5	25	—
6	300	250000



MARCH 5,1948

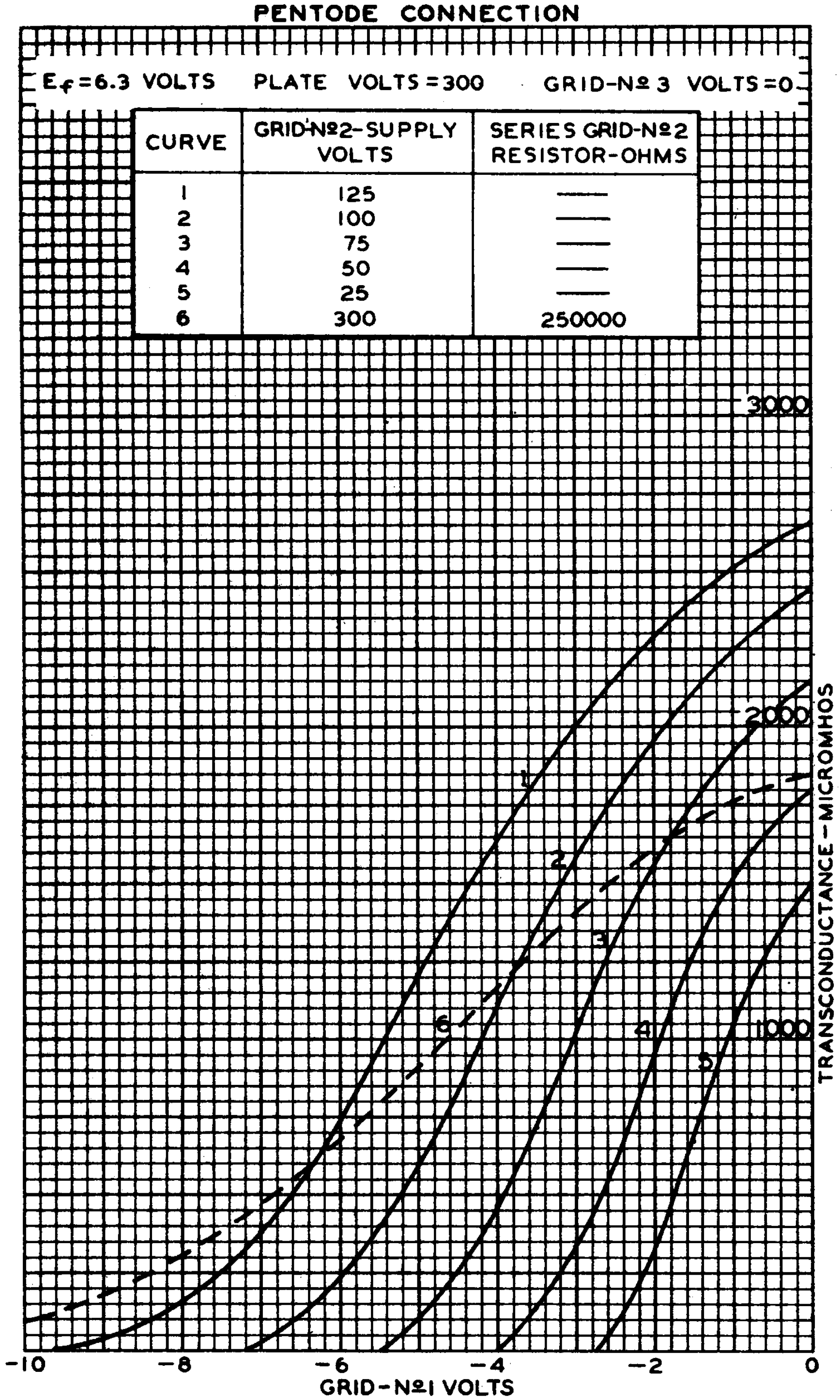
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AVERAGE CHARACTERISTICS
PENTODE CONNECTION



CURVE	GRID-No2-SUPPLY VOLTS	SERIES GRID-No2 RESISTOR-OHMS
1	125	—
2	100	—
3	75	—
4	50	—
5	25	—
6	300	250000

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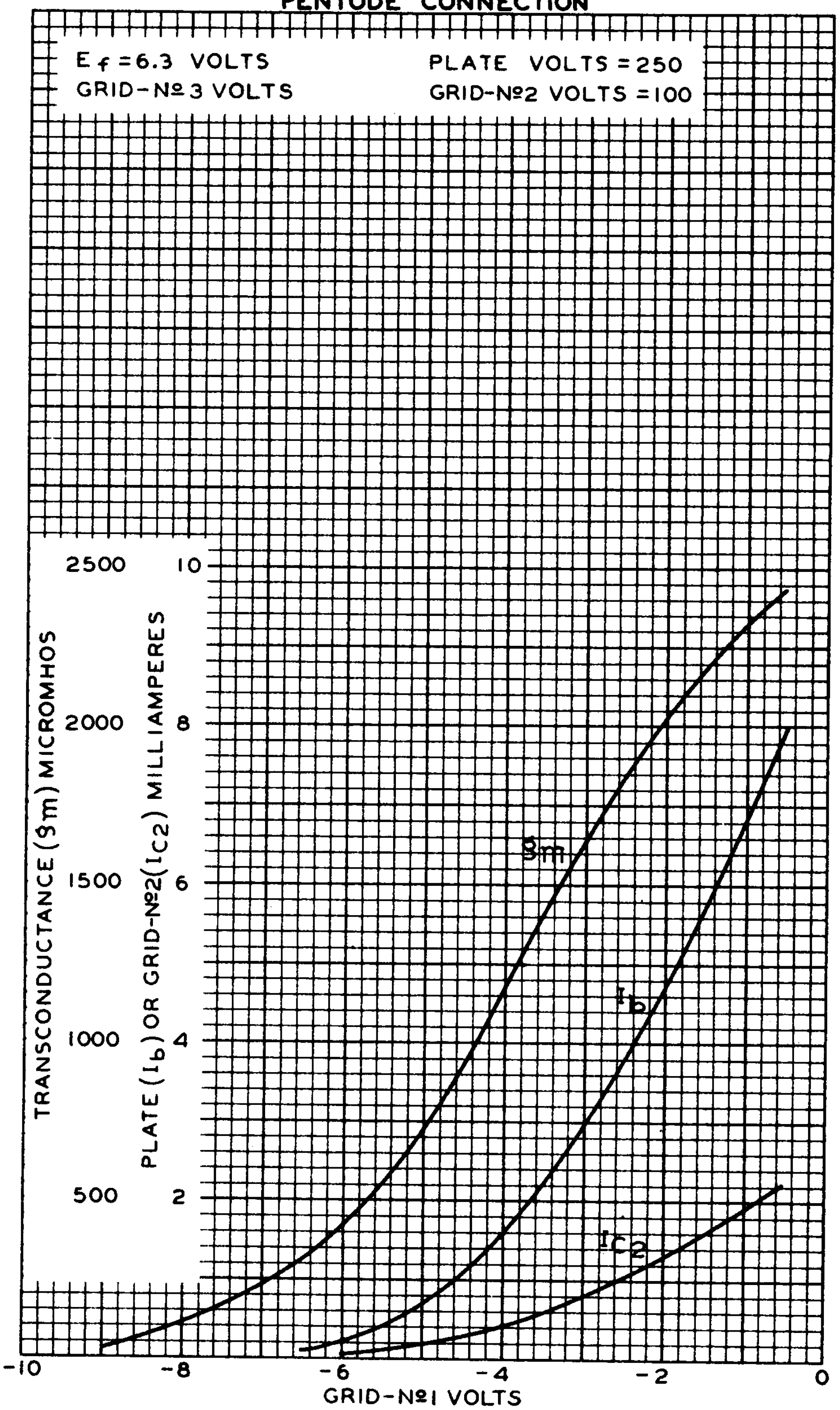
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AVERAGE CHARACTERISTICS

PENTODE CONNECTION



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